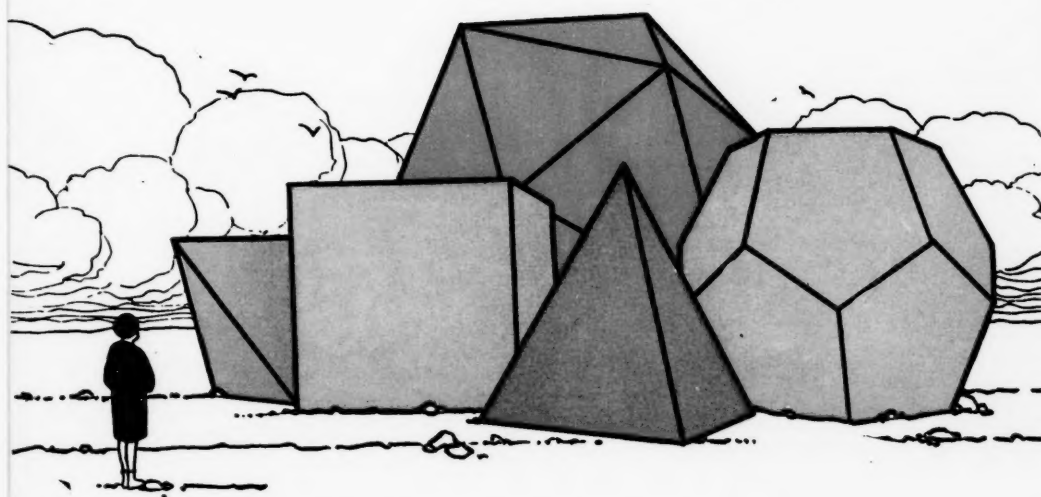


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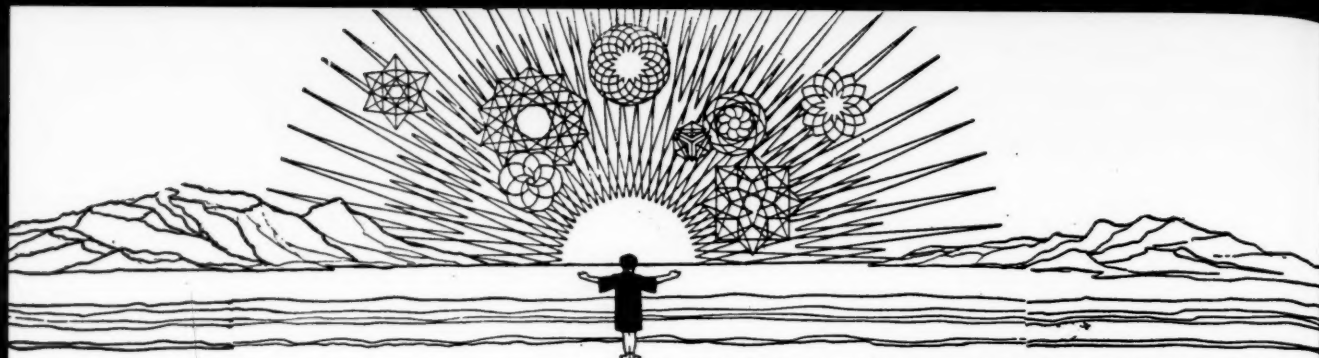
MAIN CURRENTS

IN MODERN THOUGHT



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MAIN CURRENTS IN MODERN THOUGHT

A cooperative journal to promote the free association of those working toward the integration of all knowledge through the study of the whole of things, Nature, Man, and Society, assuming the universe to be one, dependable, intelligible, harmonious.

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On the cover: A representation of man confronting the ideal forms of nature. (From *The Frozen Fountain* by Claude Bragdon, ©1932 by Alfred A. Knopf, Inc.) For discussion, see page 16.

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SCIENCE AND PARAPSYCHOLOGY

C. C. L. Gregory and Anita Kohsen

The Need for a Theoretical Structure of Person to Support Psychophysical Research

PSYCHICAL research started as a rather simple commonsense enquiry into a number of things that seemed to occupy an unwholesome stretch of no-man's-land between respectable scientific enquiry and respectable religious orthodoxy. Such an enquiry might start up again at any time; it probably does so among students the world over. Each new attempt sets out to avoid the errors made in previous attempts, and each endeavor has for its goal the capture or kill of at least one of these slippery parapsychological enigmas. Such endeavors have fortunately not been entirely confined to students with more enthusiasm than experience.

There have been men of the standing of William Crookes, Charles Richet and Everard Fielding who have vouched for paranormal physical phenomena. Fielding expressed the opinion that the phenomena "in themselves preposterous, futile and lacking in any quality of the smallest ethical, religious or spiritual value" were nevertheless symptomatic of something which must "most profoundly modify the whole of our philosophy of human faculty." No such modification has ensued.

Quite recently Dr. S. G. Soal in this country (England) has completed and published jointly with H. T. Bowden¹ a highly elaborate commonsense investigation of what is generally called telepathy, between two Welsh boys. In the case of Soal and his collaborators this was not the work of enthusiastic and inexperienced undergraduates; it was the work of persons with immense previous experience in just such an investigation. The results are fantastic; but nothing whatever has been changed by them.

Science itself, or as it was then called "natural philosophy," began with an unsophisticated enquiry into the possible lawfulness of some of our more regular experiences which we attribute to the natural world. Science was kept alive by the belief that the universe was in principle both simple and lawful, and that the secret of its lawfulness would be discovered by scientific enquiry. Science was also kept alive—perhaps a little too much alive—by its by-product, the ever-growing technological achievement. Psychical research is

kept alive by the hope that it may eventually throw some light on the mysteries of man, life, death and the universe itself. So far its only by-products have been dissensions more characteristic of religious controversy than of science, together with a few professional research appointments.

In our view the only ray of light psychical research has cast upon the nature of man has served principally to illuminate a most unpleasant neurotic symptom of our day. It is well known that when trained animals in a laboratory are set certain kinds of impossible tasks they are apt to go irreversibly "neurotic"; and we believe that the task the psychical researcher has set himself is also one that is impossible of accomplishment. The matter can put simply as follows.

NOTHING can be investigated unless it be with respect to a background of certainty, or at least a certainty far greater than that which can be claimed for the outcome of the particular investigation. Unfortunately scientific enquiry is systematically haphazard and its results depend on the credibility of the picture of the world that science is supposed to have revealed. In a scientific enquiry everything is supposed known, at least in so far as it could possibly affect the investigation, except just those local events that are being examined. Of course these may be events of enormous extent in space and time, but in order that the enquiry should be unbiased only these particular events are supposed to be in doubt, whereas everything else is in principle known.

If the enquiry should be of an alleged paranormal occurrence, then all is well so long as the investigation disposes of the paranormal element. But if the enquiry should apparently confirm it, the researcher has, so to speak, sawn off the branch that was necessary for his support. Either the whole nature of the world is different from what it was thought to be, which would of course necessitate an entirely new axiomatics of science, or else there ensues some form of neurotic behavior perhaps only to be resolved by a splitting of the investigator into a Jekyll and a Hyde.

Dr. Jekyll is the good boy who believes the scientific picture of the world which very em-

¹ *The Mind Readers*, 1959, London: Faber.

phatically involves a rejection of paranormality. His sanity is preserved so long as he maintains that nothing definitely paranormal has ever been proved, although he might agree that "in principle" scientists should try to preserve "an open mind."

Hyde, on the other hand, is quite without scientific principles although anxious to use the language of science and corner its prestige. He is reckless in naming new forces, mechanisms and processes unknown to science, and to credit individuals with special abilities such as clairvoyance, telepathy, precognition and the ability to exert psychic forces on small moving objects. Hyde does not usually go so far as to say that any particular named occurrence is definitely parapsychological; in fact he is very apt to dislike outstanding investigations. But he does maintain that, in a general way, parapsychologists have succeeded in "proving" extrasensory perception and psychokinesis.

Perhaps the most extreme manifestation of the Jekyll and Hyde syndrome we have come across is found in a Dutch book called *Parapsychologie* by Mr. G. Zorab,² European Director of the Parapsychology Foundation Inc. Throughout Mr. Zorab refers grandly to proved "paragnostic" powers, supposed accepted by every psychologist [sic], and reiterates over and over again how, by means of telepathy, clairvoyance and precognition, we can explain all the mediumistic phenomena without invoking spirits. He also writes of "parergastic" (paranormal physical) powers and calls the "parergast" (physical medium) the "energy reservoir" of the phenomena.

However, a careful examination of his long book reveals that he rejects, directly or by implication, virtually every actual specific instance of supposed paranormality in turn. For instance, he says that the qualitative clairvoyance tests could all be due to chance, and that the quantitative ones have been rendered invalid by Spencer Brown's attack, Rhine's results being so small that, ever since his experimental methods have been tightened up, he only seems to be juggling with minutiae. Analogous procedures are employed to dispose of physical phenomena and "PK," thus allowing not a single specific instance of physical paranormality. Mr. Zorab seems to be sincerely oblivious of the fact that he sometimes manifests a personality who is a convinced secular science-fiction type mystic believing in all occult phenomena, while his other self is a tough-minded devotee of official science who will stop at nothing in his zeal to discredit the phenomena.

It would seem that there are two mutually incompatible ideal scientists. *A* believes he knows what can and cannot happen in the natural world; if anything new and peculiar occurs which he is able to envisage as a natural happening capable

² (1959), 's Gravenhage: Universiteit voor Zelfstudie.

of explanation within the existing scientific framework, he can attempt to explain it in the simplest manner the framework allows, or else list it among the numerous unexplained phenomena.

B starts off to investigate with no prejudices or preconceptions except those that are supposed to be common to all sane men. If he, like Soal, establishes even one single paranormal occurrence, such as telepathy, to the satisfaction of a sufficient number of honest and experienced people he finds himself in a head-on clash with *A*.

The unsatisfactoriness of basing a science that is supposed to be capable of accommodating parapsychology on *belief* is most clearly seen by contrasting the convictions of scientists like Drs. G. R. Price³ and C. E. M. Hansel⁴ with those of parapsychologists such as Mrs. Rosalind Heywood⁵ and Dr. D. J. West.⁶ Drs. Price and Hansel wish to exclude all the paranormal, presumably because they know what the world is like, and that it does not include any ESP. If apparent ESP does present itself, this is explained in some normal manner, e.g. it is due to a hoax or fraud or chance or delusion. Mrs. Heywood also knows what the world is like: she thinks that it has been proved to contain ESP, but not materializations (p. 62). She therefore suggests that the physical phenomena are all due to fraud and delusion, but the so-called mental mediumistic data should be interpreted as due to *psi*. Dr. West also thinks that ESP is a feature of the world, but that certain miraculous cures are "self-evidently" and "intrinsically" impossible.⁷ He therefore treats the alleged miracles as Mrs. Heywood treats the physical phenomena and as Dr. Hansel treats all the paranormal phenomena—ESP included.

"Facts" are always subject to interpretation, and it is fallacious to suppose that they speak for themselves.

Is there any way out of this impasse?

THE most sensible way out of the difficulty would appear to be the construction, by scientists, of a simple universally acceptable methodology that, not being based on believed "facts," entails no elements of belief. If the practice of science is made to depend entirely on agreed method rather than on special beliefs these can be indulged in to our heart's content in the religious, social and artistic spheres.

Unfortunately our experience has been that any such attempt on the part of scientists to put their own house in order is resisted tooth and nail by exponents of what could perhaps be called the new would-be science or even the new religion

³ "Science and the Supernatural," in *Science*, 26th August 1955.

⁴ "Experiments of Telepathy," in *The New Scientist*, 26th February 1959.

⁵ *The Sixth Sense*, London: Chatto and Windus, 1959.

⁶ *Physical Research To-day*, London: Duckworth, 1954.

⁷ pp. 121, 119, *Eleven Lourdes Miracles* (1957), London: Duckworth.

of "psi." Parapsychologists, above all things, wish to achieve the status of scientists and as such to become authoritative at least within their own limited field of investigation, although their ultimate ambitions may be a good deal more extensive.⁸ This involves somehow adding a number of new beliefs on to psychology, already overloaded with analysts and their unconscious, ethologists and their drives, behaviorists and their needs, Gestalt theorists and their fields, sociologists and their groups, introspectionists and their thoughts and images, and even persons with their personality traits. Perhaps many parapsychologists think that such a mixture might well contain a little ESP and PK without causing much disturbance.

But if just a little ESP and PK should be introduced, where is it going to stop? Are we henceforward to employ *psi* as a sort of residuary explanation when all else fails? Psychical researchers frequently give the impression that they believe that science has explained everything except the data of parapsychology.

Already parapsychologists like Drs. Rhine, Pratt and Thouless have shown themselves inclined to offer *psi* as an explanation of homing in birds, a notoriously knotty biological problem, on which Dr. W. H. Thorpe, in his famous *Learning and Instinct in Animals*,⁹ simply comments by putting the word *explanation* in inverted commas.

Many exponents of the new religion do not seem to realize that to postulate *psi*—itself wholly undefined, non-quantitative and unexplained—is no sort of an explanation. For instance, Mrs. Heywood describes a veridical prophetic utterance as "this simple exercise in ESP" (p. 20). It is just the use of such loose and unscientific statements, designed to give the impression of being in some way explanatory, that induces scientists such as Dr. J. L. Cloudley-Thompson to dismiss all systems concerned with psychical phenomena as *pseudo-sciences*.¹⁰

Dr. Rhine is of the opinion that his experiments definitely establish a *dualism* within the phenomena of the natural world, referred to as "the physical" and "the non-physical." But what could this mean? Is the physical amenable to law, as in the case of electricity and magnetism, whereas the non-physical is arbitrary and hence, presumably, outside the domain of natural science? Dr. Rhine is very insistent that *psi* is a "natural" phenomenon. But all the evidence available, such as it is, seems to point to something capricious, arbitrary and unpredictable. In the case of Soal's Welsh boys, in experiments more carefully controlled than any before them in card guessing, success was conditional on monetary reward provided the boys happened to want money

at the time; but gratification of desire for money was only a necessary and not a sufficient condition, and is scarcely a "natural" cause in the scientific sense.

In a pre-scientific age, if a man was struck dead by lightning it was deemed an arbitrary act of mind or person. Perhaps it could be shown that the struck man had not said his prayers properly or had failed to nail a horseshoe points upwards over his door. Nothing could be quantitatively said as to how many men might be struck dead at one time or at one place—perhaps it could be the whole tribe or even the whole human race; perhaps, again, the vengeance of the lightning-wielding agency could take some quite other form. Accordingly it would seem that if Dr. Rhine has indeed established new "non-physical" events that defy time and space, such events cannot be considered by science until a model has been constructed for predicting quantitatively these events, or at any rate predicting them within limits.

AN attempt is now being made, both in this country and in the U.S.A., to establish parapsychology as one of the natural sciences. In most European countries, however, parapsychological investigations are considered to lie in that no-man's land we have mentioned between science and religion. In the German speaking countries a great distinction is apt to be made between the natural sciences and the "*Geisteswissenschaften*," or sciences of the spirit. This distinction is particularly stressed by Dr. R. Tischner, who thus justifies the inclusion in parapsychology of the anecdotal, qualitative, historical and the seemingly capricious.¹¹ In Holland Prof. W. H. C. Tenhaeff (who is a member of our Institute) regards the paranormal abilities of sensitives that he describes as an extension of the inwardness of memory beyond the personal experiences of the sensitive,¹² somewhat on the lines proposed by Whately Carington. This, of course, entails the notion of a world-person, or at least a super-group-person. Clearly this is not a scientific concept unless the group-person remembers in a lawful manner and not haphazardly. In other words, a theoretical structure of person or mind is required before it can be used as a scientific explanation of anything.

The theoretical approach we have suggested¹³ involves the construction of a new science, psychophysical cosmology. It is made in a number of stages which provide first for a scientific methodology that is entirely conventional and

⁸ J. B. Rhine and J. G. Pratt, *Parapsychology*, *Frontier Science of the Mind*, Oxford: Blackwell, 1957

⁹ 1956, London: Methuen.

¹⁰ "The pseudo-sciences" in *The New Scientist*, May 7th, 1959.

¹¹ "Die Parapsychologie als Natur- und Geisteswissenschaft," *Neue Wissenschaft*, Sept./Oct. 1955.

¹² "Telepathie en Helderziendheid (1957), Antwerp: de Haan. see review by A.K. in the *Journal of the Society for Psychical Research*, December 1958.

¹³ *The O-Structure—an Introduction to Psychophysical Cosmology*, (1959) Church Crookham: I.S.M.I. (reviewed in *MAIN CURRENTS* March 1959), see also "A cosmological approach to a theory of mental images," *Proceedings of the Society for Psychical Research*, Vol. 52, pt. 187, October 1958.

does not depend upon belief as to the nature of the world, or of man. The assumption is then made that nothing can be said to be known (in science) that is not a human artefact; what can be known is an ideal system or model, or some form of mathematical calculus. Accordingly the world can only be known scientifically to the extent that its characteristics or features can be simulated by a world-model.

We have described at some length a possible method for achieving a science without belief in a number of successive steps. The first stage is to replace the alleged empirical "facts" (which must necessarily contain elements of belief before they are even stateable) by measures or estimates of the significance of the observed or measured similarity between different parts of the world-event. Repetition of this method will, in principle, give the whole of the purely empirical content of science, although it may, in many cases, be quite unnecessary and unduly cumbersome and irksome. However, without actually performing such similarity measures it is usually possible to see whether so-called empirical data can be put in this form, and if they clearly can there is no reason why the more usual form of truth-statement should not be used. However, for all basic purposes the fundamental logical components of scientific discourse now become "*A resembles B*" (in respect of *C* to extent *D*)" which replaces the Aristotelian "*A is B*." *A is B* must always be ultimately reducible to *A resembles B*.

The next stage is to replace the casual assumption by a more inclusive principle or assumption which states that all parts of the world-event are at least to some extent informationally related, at least in principle, the degree of measured similarity being one of the measures that determine the degree of this relationship.

If it is postulated that similarity between events indicates the degree of informational relationship, then long-term memory can be described in terms of this model; the more similar the present image is to the event imaged, the greater is the degree of informational relatedness. However, since the particular structure we propose is a hierarchical level-structure, nothing is postulated *a priori* concerning the level or levels at which any given informational relatedness occurs.

The next step is to distinguish between the world as nature and the world as human artefact. World-models are deemed to be human artefacts and are therefore supposed to be knowable. These artefacts, because known, can be used deductively; and the deductions or predictions can be compared, as regards similarity, with those parts of the world-event the models have been designed to simulate. We then "know" a portion of the world to the extent to which it is like our model.

It will readily be seen that, with this methodology, all mechanical systems must be regarded

as approximate only, because they are constructed from ideal substances, rigid bodies etc. whose definition is that successive presentations of these ideal substances are similar.

Finally it has been found possible to devise an informational model of the universe, the O-structure, as a five-dimensional information system which, it is claimed, can be understood because at least in principle it can be simulated by a form of electronic computer. It predicts quantitatively variations in informational relationship between different parts of the world-event to the extent to which they are simulated by (are similar to) the O-structure.

It is not to be supposed that there is anything unique or final about this particular model. Clearly it may be changed at will, improved upon and perhaps altered out of all recognition, according to experience. It is claimed, however, that if *the world as causally linked things* is replaced by the idea of a *world of informationally linked events*, and if counting and similarity measurements according to agreed rules determine knowledge, rather than a vague reference to "what every sane man believes," then it will be possible at least to discuss the alleged paranormal occurrences scientifically.

If they should prove to be lawful when defined within the methodology of this proposed system, then they will automatically find their place in this enlarged and amended scientific framework, and no longer divide scientists against one another or, which is still worse, split each investigator into a Dr. Jekyll and a Mr. Hyde.

WE suggest that the orthodox attitude of ruling out all reported paranormal events *a priori*, on principle, "because they are impossible" is a mistaken though understandable attempt to safeguard the integrity of science against a very real danger of being swamped by obscurantist dogma, together with some very questionable methods and techniques. We suggest that the parapsychological movement is a symptom of unrest, of resentment against mere prejudice, a desire for a wider framework and a more imaginative approach to man's central problem, and a protest against the stifling orthodoxy of an outworn mechanistic philosophy already shed by physics.

If we are right it would be most unfortunate if either Jekyll or Hyde won the day.

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MODERN LITERATURE AND METAPHYSICS

John Saly

The Poetic Interpretation and Exploration of Man's Spiritual Problems

DURING a recent visit to the Museum of Modern Art I became aware, more than ever before, of the growing tendency towards abstraction and the veritable flight from anything that might look like imitation in modern painting. There is nothing new in this observation; people have noticed the trend for decades; yet wandering through the gallery from Degas and Cézanne to Klee and Mondrian and beyond, the impression was somewhat frightening. The human form became distorted, at first only slightly as in Cézanne, then monstrosously as in the later Picasso, until it was unrecognizable, a tangle of nervous lines or a patch of whirling colors. Landscapes dissolved similarly; in the last rooms of the gallery the canvases showed only the elements of sensation: a few unmixed colors, a few straight lines, last relics of a disintegrating world.

If it is true, I mused, that art foreshadows the changes of the *Zeitgeist*, then the pictures hanging here are words of a terrible prophecy, the Mene Tekel Upharsin of a colossal destruction. Everything will fall apart as here the world represented by art breaks up into its elements. As the greatest modern poet of the English speaking world, W. B. Yeats, put it:

Things fall apart; the centre cannot hold;
Mere anarchy is loosed upon the world.¹

But perhaps this is not the only explanation. Perhaps this flight from verisimilitude has another reason than the awareness that we have come to the end of everything in art and there is nothing to express that has not been better expressed before. Perhaps we have reached the limits of one kind of art and are now struggling to create art forms that have to be born simultaneously with new values, new ways of looking

at things, new modes of living. If these forms before me are not trying to resemble anything in the visible world, perhaps they resemble an experience that is not altogether of the visible world. It seemed to me indeed that modern art was the halting baby-speech of experiences that have not found their complete expression as yet. Contrary to the art of past centuries which showed us above all a subject through the transforming medium of the artist's psyche, here the subject becomes much less important, sometimes merely an excuse to reveal the individual quality of vision of the artist himself. This individual quality seems to come from such deep layers of the psyche that the outward visible form of a subject is profoundly altered by it. Artistic experience at these new depths becomes like the bombardment of matter by radioactive particles: the artist takes the subject,—a sitter, a landscape perhaps,—and with this new quality of vision, which for want of a better word we might as well call spiritual, he dissolves its material likeness in search of some spiritual essence.

This groping for new forms to express experience is less obvious in literature than in the visual arts; nevertheless it is dominant. I chose the example of painting because it gives a clearer, more closely defined idea of the process. To present anything like an adequate conception of the same process in modern literature, I feel I have to discuss modern poetry, the modern novel, the metaphysical ideas of modern authors, and in this order.

THE main characteristic of modern poetry is a growing concentration, the jettisoning of all conventional ornament, the preoccupation with intensity. Narrative poetry seems dying out; the intense personal lyric or the highly individual philosophic-reflective poem are now the most effec-

¹ *The Second Coming*.

tive forms. As the visual arts have thrown out verisimilitude, modern poetry refuses to follow the surface logic of the intellect. Modern poems no longer attempt to tell a story or present a syllogistic argument. In this direction, as the leading modern poets clearly perceive, nothing new is left to discover. Their ambition is to act on the reader's psyche like a chemical solvent, producing patterns that may, with some temerity, be compared to forms on modern canvases.

As modern painting seems to be hampered by a lack of means to express new experiences, modern poetry is similarly haunted by a feeling of the limitations of language. I would like to be particularly clear on this point: modern painters have given up the most obvious approach to the onlooker, that of reminding him of faces, cows, bridges which he knows, because modern artists feel that in this way they can no longer express anything of the personal experience they want to convey. Similarly, modern poets, at least the ones who matter, have given up logical or rhetorical structure, refuse to tell a story, an anecdote, an incident in poetic language, because such methods would dilute the intensity of the experience they try to represent and would only affect the surface layers of the reader's psyche. Modern poets, more than their predecessors, want to act on the reader's emotions to a greater degree than on his intellect. But we live in an age when language is rapidly becoming debased; words are rubbed smooth and lose their emotional power. Newspapers, advertisement, radio, TV are using up millions of words every day and grind them into so much meaningless noise. The modern poet's task therefore seems a somewhat hopeless one. Yet, being a poet, he cannot help but try to express what he feels he must, the awareness of different states of being, the invisible changes in the psyche. No wonder, then, that, as T. S. Eliot says,

Words strain,
Crack and sometimes break, under the
burden,
Under the tension, slip, slide, perish,
Decay with imprecision, will not stay in
place,
Will not stay still.²

Poets, of course, have always relied more on combinations of words than on words by themselves to carry the impact of meaning. But today these combinations, these figures of speech have to be more daring, more unexpected, more suggestive than ever, not only because traditional rhetorical devices have lost their power, but also because there is something new to express. Thus the modern poet's most effective means is the powerful image that directly appears to the senses,

² Burnt Norton.

linked to a more general concept in a daring simile, or more often in a metaphor. (For the purposes of this discussion we can define metaphor in the usual way as a figure where a word which in ordinary usage signifies one kind of thing, quality, or action is applied to another, *without* express indication of the relation between them.) He needs the powerful, unusual image to express intensity. And he needs the metaphor to suggest subtle connections in the psyche, elusive changes of a non-material nature. Metaphor, by bringing together two subjects, almost engrafting one upon the other, can present a quality which would otherwise be beyond the power of language to express. In this, metaphor works somewhat like Hegelian dialectics, creating a new synthesis from two widely dissimilar and even opposite terms. For it is not quite true that metaphor or simile is simply the presentation of the unknown in the terms of the known. It is rather the bringing to life of a general concept by means of a strong image. To use the eternal example, Robert Burns's simile

My love is like a red red rose
does not simply mean that as we do not know Burns's love but we do know what a red red rose is like, we will get a picture of the girl in this way. It means rather that we get a feeling, an experience of a certain quality in the girl, a quality by no means restricted to physical appearance.

To take an example from modern poetry now, which also illustrates the striving of today's poets for striking, unusual, yet non-ornamental imagery, I quote the Italian poet, Eugenio Montale:

La tua irrequietudine mi fa pensare
agli uccelli di passo che urtano ai fari
nelle sere tempestose . . .³

(Your restlessness makes me think of birds of passage dashing themselves against lighthouses on stormy evenings.) (Translated by George R. Kay.)

The quality of restlessness suggested by this violent image is such that, even to circumscribe it, one would need a dozen lines of prose. The compressed power and violence of the simile creates this quality in the reader directly. At the same time, comparing the eighteenth-century simile to the modern one, we can make another observation which helps to define a trend, not merely in modern poetry but in modern literature as a whole. Burns's comparison of a girl to a rose, charming and sincere as it may be, has, nevertheless, an element of flattery which love poetry has used for thousands of years. But Montale's description of a woman's restlessness does not sound like a compliment. It is rather a frighteningly accurate glimpse of her soul. Modern poets use their strong and unusual imagery to fix such

³ Dora Markus.

glimpses of inner reality on the written page; mostly they are not concerned, as their fore-runners in daring figures, the seventeenth-century poets, often were, with proving their own wit and ingenuity, but rather with giving an impression of stark inevitability. Their great ambition is to describe the inner reality of people, cities, or landscapes faithfully, and not to delight in their own technical mastery of the medium in the development of a clever conceit.

When they describe people, modern poets are seldom diverted from exploring the depths of a personality: color of hair or shape of body is much less interesting than inner qualities such as an unquenchable restlessness or the secret that enables a woman to endure life. In the poem by Montale this secret is only guessed at, but the whole personality of the girl is summed up in this guess:

Non so come stremata tu resisti
in questo lago
d'indifferenza ch'è il tuo cuore; forse
ti salve un amuleto che tu tieni
vicino alla matita delle labbra,
al piumino, alla lima; un topo bianco,
d'avorio; e così esisti!⁴

(I do not know how you resist, though spent, in this lake of indifference which is your heart; perhaps some charm saves you, one you keep near your lipstick, your powder-puff, your nail-file: a white mouse, in ivory; and so you subsist!) (Translated by George R. Kay.)

And when the great poets of our time reflect on the particular quality of contemporary life, they do not describe customs or manners, nor do they repeat the arguments of prevailing ideologies, but try to show a subtle change, the change of the *Zeitgeist*:

O trotz Schicksal: die herrlichen Überflüsse
unseres Daseins, in Parken übergeschaümt,—
oder als steinerne Männer neben die Schlüsse
hoher Portale, unter Balkone gebäut!

O die eherne Glocke, die ihre Keule
täglich wider den stumpfen Alltag hebt.
Oder die eine, in Karnak, die Säule,
die fast ewige Tempel überlebt.

Heute stürzen die Überschüsse, dieselben,
nur noch als Eile vorbei, aus dem waagrechten
gelben
Tag in die blendend mit Licht übertriebene
Nacht.

Aber das Rasen zergeht und lasst keine
Spuren.

Kurven des Flugs durch die Luft und die,
die sie führen,
keine vielleicht ist unsonst. Doch nur wie
gedacht.⁵

(In spite of fate: the lordly overflowing
In which our life spilled over into parks
And men of stone under balconies bowing,
Flanking high portals which their power
guards!

The bell of bronze that lifts a heavy mace
Against dull everyday, bell never tired,
Or in Karnak the one column that stays,
When almost timeless temples have expired.

Our old abundance plunges past today
In haste and speed from the flat yellow day
Into a night dazzling and overwrought.

Yet when the frenzy goes, no trace remains.
Flight-curves in air, of those who led the
planes

None may be vain. But they live as if
thought.)

Rilke succeeds better than anyone else I know of in juxtaposing the spiritual qualities of the past and the present, which makes the reader more aware of both. But the change is not confined to the works of man and to society; it affects man's innermost being. Freedom becomes the precondition of any individual fulfillment. Man must change, must seek another dimension:

Wer sich als Quelle ergiesst, den erkennt die
Erkennung;
und sie führt ihn entzückt durch das heiter
Geschaffne,
das mit Anfang oft schliesst und mit Ende
beginnt.

Jeder glückliche Raum ist Kind oder Enkel
von Trennung,
den die staunend durchgehn. Und die ver-
wandelte Daphne
will, seit sie Lorbeern fuhlt, dass du dich
wandelst in Wind.⁶

(Cognizance acknowledges him who pours himself abroad like a fountain; she leads him spellbound through the realm of joyful creation which often ends with the beginning and begins with the end. All blessed spaces are children or grandchildren of partings. Through these spaces they go wandering. And the transformed Daphne, since she feels herself a laurel now, wants you to change yourself into wind.)

IN modern fiction this exploration of the psyche is carried on in a somewhat different way. Instead of presenting glimpses that show the truth of emotions in a metaphor or a simile, modern novels aim at a more comprehensive picture of the same truth, not merely given but analyzed and

⁴ Ibid.

⁵ Sonnette en Orpheus, Zweiter Teil, XXII.

⁶ Op. cit. XII.

commented upon by the intellect. Many modern novels are, in fact, novels of ideas, where the intellectual element predominates. Even so, poetry and prose are perhaps closer today than they were ever before. The reason for this is, I think, that both are bent upon exploring and presenting individual souls alone or in relationship to other souls, both treat society and even nature as secondary to this quest. Prose fiction often attains the intensity of poetry, since it has no other means to convey to the reader's emotions the reality of a character's inner world, or the subtle changes of atmosphere that result from an interplay of psychological forces. The general tendency is, with some inevitable but insignificant reversion, away from the novel of society, the novel of manners, towards the description of highly individual human relationships. That the novel of adventure is still a suitable genre in the hands of many writers has a good reason: the extreme situations in such novels have a symbolic value. With writers like Conrad or Malraux the dangers and glories of adventure become the symbols of man's spiritual condition.

In the novels of Henry James a very modern feeling is expressed: as we see his elegant, carefree figures move across drawing rooms, we are becoming uncomfortably aware that nothing is unimportant, that in the lifting of a silver spoon great moral issues may be involved. When William Blake, the first romantic, exclaimed that "everything is holy!" he did not foresee how this assertion would reappear, in a form carefully pruned of religious connotations, in modern literature. Henry James sees moral importance in a word, in a gesture. Moralizing, directly or indirectly, is perhaps one of the most striking characteristics of modern novels; it is much less evident in modern poetry. Though this moralizing is rarely a praise of traditional virtues and very seldom explicit, it is there nevertheless. A book like James Joyce's *Ulysses* is the supreme example. Joyce writes with open defiance of what might be called the morality of Church and State. Yet the total effect of the work cannot be called immoral or even amoral; in fact it is an exhortation for charity rather than for faith and hope, since charity is the greatest of all virtues. And to make his appeal for charity, Joyce carries one step further Henry James's conviction that nothing is unimportant. In describing the most private bodily functions of his modern Ulysses, Mr. Bloom, Joyce says, in effect, that we must accept everything in life, we must face total reality, both physical and spiritual. *Ulysses* is a practical experiment in testing the Blakian creed of "everything is holy" in the lives of an unheroic hero, an unchaste heroine, and a perversely proud young man who wants to be an artist of genius. And the curious thing is that the experiment, at least to my mind, succeeds. One puts down the book with the feeling that one

knows everything about the main characters and that, in spite of their many imperfections, they may, and even should, be loved. Joyce has made his moral point.

What makes moralizing in modern fiction often directly the contrary of old-fashioned "poetic justice" is, of course, the powerful intellectual current of the last hundred years which is sweeping us towards a "transvaluation of all values," to use Nietzsche's phrase, who was the prophet of this change. Thus even seemingly "immoral" modern writers like Gide or Hemingway have their moral absolutes in sincerity and self-honesty. The most important thing the individual can do, according to these writers, is to face the truth about himself and be honest about his life. To pretend to be other than you are, or to neglect your own truth in order to put on a more attractive but borrowed attitude is, in the eyes of modern writers, the unforgivable sin. This morality, however faithless, hopeless, and negative it may seem, already holds a promise of spiritual rebirth, because it keeps the soul away from areas of public hypocrisy and insincerity, where genuine spiritual experience is hardly possible. Following this iconoclastic tendency, modern writers as well as modern philosophers have been trying to wipe the slate clean before something new can be written on the tablets of men's souls.

But the exploration of the individual psyche and a strong moral preoccupation are not the only trends in modern fiction. Another, and a rather surprising one, is the presence of ugliness, violence, brutality, perversion, which modern writers seldom tire to picture. It seems that since the large majority of the enlightened public have ridiculed and denied the existence of hell, it has retired into works of fiction, where it survives very vividly indeed. Modern writers on the whole feel that it is no longer satisfactory to turn away from evil, to throw a sentimental or humanistic veil over it, but that evil needs to be faced directly, since its existence is part of the total reality. From this need, and also from a lack of clear positive beliefs, comes the preference serious modern fiction shows for picturing the ways of damnation rather than those of salvation. I would like to cite one example of how effectively this can be done. In D. H. Lawrence's novel *Women in Love* one of the main characters is Gerald Crich, a young industrialist, full of power, drive, energy, but spiritually ignorant and incapable of love. At the end of the book, after his love affair has proved a failure ending in mutual hatred, he goes out skiing in the Alpine resort where the estrangement took place and, climbing higher and higher into the icy wilderness, is at the end found dead of exposure. His death among the inhuman mountain scenery, in the wind and the cold, is symbolic of his spiritual isolation and lovelessness

and shows Lawrence's understanding of certain states of the soul.

THE tendencies I have pointed out in modern poetry and prose have led to a certain difficulty of communication between author and reader. Since intensity is a matter of life and death to the modern poet and scarcely less important for the modern novelist, they have to reach deep down into their individual psyche for effective means of expression. In our age collective images of religion, nationality or race are losing their intensity and most of them tend to become clichés from which the emotive power has oozed out gradually, at least for readers above a certain intellectual level. We are becoming increasingly aware of our private worlds where collective emotions can only affect us if they appear in a guise familiar perhaps from childhood. Thus on the one hand, poets and writers must speak a highly individual language to feel their own intensity and sincerity; readers, on the other hand, must, in some way, be tuned to these individual images, figures, atmospheres to experience the poem or the book. Intellectually at least it is difficult for the modern poet or writer to find a common language with a large public. And poets on the whole, as well as those novelists who will, I think, be read a hundred years from now (Joyce, Conrad, Lawrence), have chosen to speak in the terms of their private beliefs, risking the indifference of the majority whose minds still move along conventional grooves.

Poets and writers thus often had recourse to private mythologies to express what they felt to be universally true. To express the universal truth in other forms would have meant, for them at least, to kill it with the deadly breath of the commonplace. Yeats had his own Pantheon where the forgotten heroes of ancient Ireland sat side by side with the great figures of the poet's youth; he had his theories of self-realization and immortality expressed in highly individual terms; and, last but not least, he had a scale of values that was not from the marketplace. His system, whatever we may think of it, supplied powerful metaphors for his poetry and enabled him to speak of eternal things with a new voice. Even T. S. Eliot, who is commonly put down as a more or less orthodox Anglo-Catholic, has found it necessary to speak through highly private images and symbols, deliberately avoiding the highroad of sermonizing. The fragments he "shores against his ruins" in the *Waste Land* are snatches of verse that affected him as an individual very deeply, but might be quite meaningless to others. The reason for Eliot's popularity, beside his technical excellence, lies in the inimitable modernity of his sensibility. Though he has torn his images from the roots of

his own individual psyche, the images produce a long and lasting resonance in most readers familiar with contemporary urban civilization. Which of us would fail to respond to feelings like these:

His soul stretched tight across the skies
That fade behind the city block,
Or trampled by insistent feet
At four and five and six o'clock;
And short square fingers stuffing pipes,
And evening newspapers, and eyes
Assured of certain certainties,
The conscience of a blackened street
Impatient to assume the world.
I am moved by pencils that are curled
Around these images, and cling:
The notion of some infinitely gentle
Infinitely suffering thing.⁷

The widespread response to Eliot's poetry, however, does not indicate in the least that he uses the language of convention; his emotions are those of his age, but precisely because he expresses them through a private mythology where East and West meet, is he able to affect his readers so profoundly. Yet even if private mythologies are constructed from childhood memories, books, acquaintances,

Memories of the words of women
All those things whereof
Man makes a superhuman
Mirror-resembling dream.⁸

behind all private images certain beliefs exist which may be spoken about in direct, though abstract and thus emotionally ineffective, language. And if we come to consider at last these beliefs in modern writers and poets, we find that certain doctrines previously restricted to small and exclusive groups are being more and more openly expressed.

All great modern poets echo the testimonies of mystics, from Heraclitus to Jacob Boehme, about the existence of another realm, *in* life and yet *beyond* it, where man's real development takes place. Of course this is what the established religions assert in their own way, but the modern mind seems to find more value in the individual utterance of the mystic than in the safe intellectual formulation of his Church. Thus Eliot uses St. John of the Cross together with Eastern symbols like the lotus flower, the wheel, and passages of the *Bhagavad Gita*, to state his transcendental beliefs. As an Anglo-Catholic, he does not, of course, speak about reincarnation. But his representation of other dimensions of existence in the *Four Quartets* has a strongly esoteric coloring:

⁷ *Preludes*.

⁸ W. B. Yeats, *The Tower*.

I can only say *there* we have been: but
 I cannot say where.
 And I cannot say, how long, for that is to
 please it in time.
 The inner freedom from the practical
 desire,
 The release from action and suffering,
 release from the inner
 And the outer compulsion, yet sur-
 rounded
 By a grace of sense, a white light still
 and moving,
Erhebung without motion, concentra-
 tion
 Without elimination, both a new world
 And the old made explicit, understood
 In the completion of its partial ecstasy,
 The resolution of its partial horror.⁹

Yeats and Joyce make no secret of their belief in reincarnation; D. H. Lawrence comes very close to suggesting it in his last poems. The doctrine of self-purification on the soul's return journey to God is the intellectual backbone of James Joyce's *Ulysses*. Both main characters have to find and face their lower selves and thus reach a spiritual turning point. The reaching of this turning point is the climax of the book. D. H. Lawrence, too,

⁹ *Burnt Norton*.

believed in the development of what he called "consciousness not in the head but in the solar plexus," which is, of course, the same as the higher spiritual consciousness of the mystics and yogis. Lawrence, however, never came to realize his own beliefs clearly because he was misled by a strong emphasis on power and attributed a redemptive value to the sexual act which it hardly ever possesses.

Thus what Aldous Huxley calls the "perennial philosophy," the common experience of the mystics of East and West, has come to the surface in modern literature as a system of belief, expressed in highly individual terms. I think the main, though very often unconscious, preoccupation of modern writers is with the spirit as such, what is it and how can it be represented in poetry or fiction. Poets wish to give us a spiritual quality through metaphor, image, sound, presented directly to the emotions. Writers of prose embark upon an exploration of spiritual states, mainly those of hell and purgatory, since the experiences of heaven are as yet comparatively rare. Some of our greatest poets and novelists have gone beyond suggesting and have tried to give us explicit teachings about man's spiritual destiny and the nature of spiritual reality. These teachings support the main trend towards the unique, the individual, the incommunicable in modern literature by sending us directly to personal experience.

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THE SEARCH FOR CONCEPTUAL UNITY

F. L. Kunz

Considerations Pertinent

to an Institute for

Integrative Studies

I
A COMPLEX society can only go forward if its institutions are continually improved, so that they operate more and more fully in consonance with the orders of the universe, that system in which society, the individual and nature are encompassed. In the human mind, this system appears as loosely connected, more or less valid, generalizations or concepts. Because of these concurrent facts, it is obvious that the major task of education lies in proving and diffusing the concepts. Failure here is failure at the center.

For a human society language in some form is essential, and it dramatically exemplifies human dependence on abstractions. No one can speak a meaningful word—a word more significant than a grunt or a cry—without using some classification, that is, a system which orders experience so that it can be shared with another. For example, a hat does not belong to the class called boots. When we say *in*, we imply *in-ness*, not *out-ness*. A man means *any* man, and a universal idea lurks in that smallest of words. In any workable society, the essential function of a word is to evoke, in approximately stable fashion, the class, the orders, the concept signalled by the sound.

This single example of language is enough to show that a complex society cannot exist unless it has formulated and shared a substantial body of orders. Except in tyrannical states (where whim and wish may take the place of reality) and in institutions for the insane, conceptual orders must ultimately be in agreement with the nature of things. For man himself is primarily an expression, a product, of a universe. He is only secondarily a citizen of a specific culture or people. His basic imperatives come to him from his own potential, which is rested in part upon nature.

It is clear today that all nations, and the global society which is coming into being, are in grave trouble because they seek superficial solutions along political, economic and other institutional lines. These can never be successful unless the

institutions themselves are improved, and this in turn can only be achieved by educational means, themselves dependent upon research. There can be no freedom under law in any ultimate sense, if the laws remain unknown. The mere assertion of the will to be free is meaningless. We are not free to fly unless the laws connected with flight are known, obeyed, and used. Therefore we must systematically seek knowledge of the principles upon which the universe operates and which man must obey and wisely use if he is to be free.

In respect to matter and energy, our command of the orders of nature is considerable. But in regard to life and its functional forms, our knowledge is deficient, and it is deplorably fragmentary as to man and his works. In short, those areas which we need most of all to understand are shrouded in a twilight of confusion which deepens into darkness. In this darkness of ignorance we have become afraid.

II

OUR firmest knowledge of natural orders derives from three sources.

1. For ages man has accumulated information about subjective and objective experiences. The ideas based upon this information, and tested again and again, have built up the body of folk knowledge. The fact that this knowledge has become sophisticated, over the centuries, does not change its essential character. Many priceless insights into the nature of the universe, the meaning of human existence and the place of love and ethics in human relationships have thus slowly formed. Oddly enough, much of this lore is still prized and used as ideals or goals, but considered as knowledge, it is now suspect. The cause for this rejection, as is well known, is the rise of science as a pursuit outside the framework of the humanities.

2. Over the years, scientific generalizations have prompted testable hypotheses, and so led on to

predictions of nature's orderly behavior, often in mathematical and measurable terms. These hypotheses, when verified, have built up a vast, almost unmanageable, mass of knowledge about the orders of nature. It is a very mixed bag, and much is descriptive, so that the conceptual validity is quite uneven. Nevertheless, so large and so useful is this body of knowledge that many educated people believe that there is no reliable method of knowing other than that of generalizations abstracted from sense data, hypothesis, prediction, and test.

3. There is, however, another *kind* of science—deductive-exact, empirically tested—which has been in use for some centuries. This is the other side, the obverse, of that precious scientific coin of the world-realm that must come to be. Since the precise character of this method is not commonly understood, and since its potential usefulness in fields outside physics is little appreciated even within university circles, it is necessary to identify the principles which distinguish this third method of knowledge of natural order. It is really as much a part of the humanities as it is effective at the highest levels of scientific endeavor.

So elegant are the workings of this form of knowledge that the essentials can often be stated in starkly beautiful terms. But we must be clear on an important point. This method does more than lead us to the highest ranges of knowledge of natural order. Close study of the method as such discloses, as well, characteristics of the human potential as a whole. Basic powers of the human mind, insight into some of man's noblest emotions, and clues to the directives which the universe prescribes to us in our pursuit of the good, are all to be discerned. In short, pursuit of this method takes us perforce over into the subjective world, the unseen and unseeable—but directly experienced—domain where beauty and goodness rest with truth. For pure thought leads to loveliness and to love of goodness, by very nature of the arduous and exact pursuit of truth. Thus the method may be said to be philosophical and metaphysical, just because it is positive science at its very best.

III

IN science, the deductive exact process properly starts with a certain type of postulate which is assumed to be true although wholly ideal and beyond sensory experience. (This should not be taken to deny that sense perceptions of certain kinds may partly hide and partly reveal comparable principles.) It is of first importance to note that the postulate is quite different from the hypothetical generalization, in this very respect. The latter is drawn from sense data, and it is about that data. However it may be prompted—and this process is unknown—the for-

mer when clearly articulated is seen to belong to the class of ideas called pure thought.

As a rule the postulates, when thus clearly enunciated, turn out to be assumptions about infinities, perfections, and the like. They usually have reference to space (geometry), or to space-time (hypergeometry), and like elements subjectable to mathematical treatment.

In the present state of affairs this mathematical and logical structuring is the only manner in which deductive-exact knowledge is firmly shaped. Later, no doubt, as mankind evolves, other methods than those of mathematics may be worked out. Even today, in the highest arts, reflection suggests that we may assume that ultimates lie in the background, as we may dimly feel in the presence of exalted musical experience.

It is notable that the above-mentioned characteristics, such as perfection and infinity, are also ascribed in religious faiths to the divine source, or Reality, although the verbal terms used are such as omnipresence, omniscience, and so on.

In science, however, the object is valid knowledge, and even control of nature through obedience to and use of her basic orders, and the postulates are profitless if left as mere beliefs. Being strictly treated by logic and mathematics, certain *inescapable*, publicly demonstrable, conclusions can be drawn which, when well done and finally justified empirically, turn out to give us more exact knowledge of natural order than does any other form of knowledge or experience. In fact it may be said that if we are to find natural laws for the purposes of improving the institutions of free societies, this is at present a required method.

In the case of religion, notions of omnipresence and omniscience remain usually emotions or feelings, arrested as such because seldom worked out in consistent form. At the other end, religion has content, namely, a body of social-ethical ideas and practices, and of inherited lore. But we make little effort to connect these firmly with the postulated concepts of infinity and perfection, nor laterally with the rest of valid knowledge. The situation is schizoid.

In the case of the arts, such as music, an emotional tone is also present, necessarily, since all sense experience has a feeling ingredient. It may be strong and vital and ennobling, too. But, as in the best of religion, there is also some rational content, seldom explored deeply enough to disclose the infinitude and perfection which may lie behind *both* the acoustical and the musical principles.

IV

SINCE in natural science the original assumptions about specific aspects of infinity and perfection become an integral part of demonstrable

structures and workable processes, they become publicly demonstrated as operable *truths*, not mere speculation, nor unimplementable belief.

This is doubtless one reason why we all feel coerced to live by science, and yet find it difficult to act according to the concrete yet universal principles of religion. The latter we say we believe; the others we say we know. Truly religious persons maintain that they know directly, and when they live accordingly—i.e., make over their lives, as demonstrations—we may respect and prize them. But the structuring, whether reasonable to them or inarticulate, necessarily remains a private possession, and cannot lead to a consensus except to those capable of leading similar experimental lives. Society deals harshly with such individuals and communities, even such of them as history later pronounces to have been admirable.

The pragmatic failure of religion, then, is caused by the lack of operating connections between basic faith in infinitude and perfection, and the finite, material, imperfect approximations with which we have to deal every day in the ethical and moral challenges of ordinary life. The same contrast turns up in science. Imperfections are also seen in crystals, for example. But since in crystallography we possess a fairly fully worked-out body of theory (operable truth), we *know* which parts are imperfections, and the extent to which nature has succeeded in expressing in matter the ideal properties of crystalline space. In our complex society the gulf between the ideal and the actual has widened into a deep and dangerous chasm. What is right and what is wrong becomes *operationally* uncertain. All agree that love, justice, freedom and the like are universal rights and necessities for mankind. But now that slaughtering one another to realize these ideals is quite impractical in the physical sense, we are compelled to turn our attention to realizing and possessing these ideals in the manner appropriate to the nature of the principles themselves. It is necessary to discover "the laws of Nature and of Nature's God" which validate and (when made known and used) bring about a world of love, justice, freedom—yes, and leisure and security for all mankind. This is a research problem. It has become practical since nineteenth century materialism and mechanism have been put in their proper place, and the universe has come to be seen as a potential of light and of harmonic order exquisitely suited to such a human society.

The two-party, and the multiple-party democracies are in just as much trouble as the other political systems in this particular matter. When ideals are regarded as goals and not as inevitable outworkings of the universe through man (and, as far as that goes, through nature) it is possible for men in public life to adhere verbally to these ideals while actually conducting their public lives in terms quite disparate. For such cases there are

no *working* criteria. Men proclaiming the loftiest ideals in eloquent language but practicing all the lowest arts of political bargaining and worse are likely to be elected over genuinely honest men who speak courageously and to the point. For as of today the resounding platitude is verbally the same as the noble ideal. The issue here is not the private character of such men so much as it is the system they live in. The highest ideals may actually be pursued to little gain in a system which fails to show through education that the universe itself is an ideal system, with laws by which it maintains an evolutionary process which slowly but inevitably leads to the triumph of right, of truth, of beauty.

V

IN physics and chemistry (as noted above) the success of this deductive-exact method, the highest form of science, can be readily demonstrated. Few examples of its success can be cited in biology, fewer still in the sciences of man. The overweight of success in respect to matter and energy is, therefore, both an advantage and a danger. It tends to the belief that these are the only major kinds of orders, and hence that life is but a yeasty scum of protoplasm on the face of the planet, man but a vapor arising from the slime.

A rich program of research can be formulated to get a better balance in the sciences themselves. In practice this means, first, to examine the present status and content of this kind of knowledge in physics, chemistry, and astronomy, in order to disclose the root postulates and the structures in each significant example. Then the nature and value of the inquiry will be clear, beyond doubt, and the use of the method in other areas can be expected to increase.

We may be confident that the very considerable evidence for like, but more subtle, lawful orders in life and functional form will be seen. The writings of D'Arcy Thompson, Herman Weyl and others will be starting points in this area.

Although little or nothing is available along these methodological lines as to man and society, what may be found so far should be assembled. These will prompt new investigations.

The ultimate goal is to disclose the background of Reality in which not only all science—whether physics, biology, or anthropology—but religion, art and ethics, and the very game of life itself, inhere.

VI

WORK done systematically and with authoritative documentation will constitute a small beginning of a publicly demonstrable consensus upon which the educational systems of free men the world over can rest an important part of their

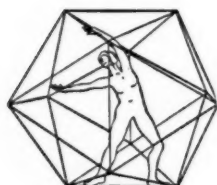
necessarily otherwise varied programs. We start with physical science for obvious reasons, but at that and at every other stage the true shall be demonstrated as one with the beautiful and the good, until at last juncture with inherited culture can be made at many important points.

Such a study is imperative for secular education in this and other societies. The world transition will be peacefully facilitated by the production of teaching materials, good in any land, which are conspicuous because of their total, searching, and valid meaning for a philosophy of man, society, nature, and the noumenon. Such material can fill the gap between (on the one hand) those speculative or historical treatises on philosophy; and (on the other hand) texts which develop concepts restricted to the area of science or aesthetics or sociology and so on for which they are prepared, by specialists for specialists.

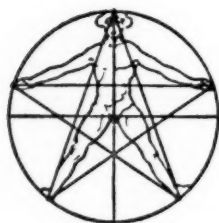
Such educational material will show that the humanities and the sciences are one enterprise, philosophically and metaphysically speaking, and thus they will help to develop an electorate and a management generation which will have some cohesiveness and common understanding. We boast of our freedom, but we ignore our state of confu-

sion. Are we content to be a kind-hearted rabble? How can men co-operate in matters social, political and economic in a complex society like ours without a common body of scientifically and culturally grounded concepts as a basis for judgment? By what procedure other than that which has been outlined—namely, research and publication of all kinds of scientifically and rationally valid educational materials of *conceptual import*—can free men arrive at a consensus sufficient to lead to firm and ethical public policy? Do we not have to restore confidence in the meaning of human existence for the individual if we are to claim that the individual is unique and his person and life are sacred? How else is this to be done if not by showing that man is the creature who is capable of knowing and working out the Real in his life, as well as the experienter of the ephemeral?

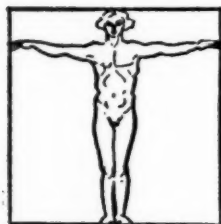
At present only the start can be made. A properly staffed, equipped, and financed research institute for integrative studies could, of course, greatly accelerate and broaden the program. The times call for such acceleration and broadening and they are favorable. For American scholars and scientists are now coming to the defense, and will gladly come to the aid, of the life of the mind.



THE life and creative work in the art of movement and choreography by Rudolph Laban (1879-1958) is celebrated in *The New Era* (London, May 1959), the journal of The New Education Fellowship. Illustrated articles by Mary Wigman, Lisa Ullmann, Albrecht Knust and others form a sharp intaglio of a gifted man.



We adapt from a photograph (on page 97) a dancer illustrating one of the twelve "main halts" natural to the recovery of balance which Laban pointed out as registering a relationship to the icosahedron. (First figure at left.) This constitutes an extension to the dance of static proportions of the human and other forms related to regular polygons and polyhedra, as noticed by Leonardo da Vinci and others. (Bottom two figures.)



On the cover of this issue is a drawing based upon an illustration from *The Frozen Fountain* by Claude Bragdon (with kind permission of the publishers, Alfred A. Knopf, Inc.)—that exquisitely designed treatment of the properties of the polyhedra in architectural design and ornamentation. From the same book is our masthead streamer, and two of the many possible postures of the human figure, shown at left. Behind these, and hundreds of other little known fragments, lies a domain peered into by D'Arcy Thompson, Hermann Weyl and many others, but as yet not seriously explored. Laban's item is but another tantalizing glimpse.

SOURCE READINGS: INTEGRATIVE MATERIALS AND METHODS

The Expansion of Space

WRITING on "Space" in the May 1959 issue of *The British Journal for the Philosophy of Science*, Reginald O. Kapp suggests that a return to the point of view of the 1920s could offer fruitful lines of study for the physicist and astronomer. In Eddington's time the focus of interest was the interaction between space and ponderable matter, whereas today it is more often the interaction between particle and particle. For this reason less attention is paid to the fundamentals of relativity and to the questions which interested early relativists.

Prof. Kapp begins his discussion by quoting a statement of Woodger's in which he exposes some prevalent errors concerning the nature of reality. "Another tenet of this philosophy," Woodger writes, "seems to be that everything that is in a big box called Space, which is floating down a river called Time. Consequently if anything (except the river) is not in space, it is just not at all." This view, which Woodger invites us to reject, contains two errors. The first is the assumption that only those things with location have reality; that "what is nowhere is not," "nowhere" and "non-existent" being regarded as synonyms. Kapp points out that the error lies in assuming that physical reality is the only kind of reality. The second error of the big box concept concerns the nature of space. The view involves a number of absurdities, as, for example, the question of how much reality must be put into a given region of space so that it may be 100% full.

The pre-Einstein position had another defect: it obliged us to think of ponderable matter as having two distinct environments, one called "space," which was featureless, and the other "luminiferous ether," which had various features. Now, however, it is recognized that a space of which no part is distinguishable in any way from any other part is not observable by any physical means; its nature is purely conceptual. It is difficult to argue that a featureless space has any physical meaning. This leaves the measureable features in the environment of ponderable matter, which all have something in common that can be expressed under the term field of force. As there are at least three kinds of field, electric, magnetic, and gravitational, so this environment may contain three different kinds of potential gradient, each of which may vary both in magnitude and direction. Einstein chose to retain the word "space" for this collective of potential gradient.

Relativity theory also showed that the proper-

ties attributed to the luminiferous ether could not be so attributed to the environment of ponderable matter. It appeared at least possible that they could all be replaced by one single property, "curvature," a term which Einstein used to show that a field of force—at least when the force is gravitational—is a region for which the geometry of space is non-Euclidean.

The conclusion that curvature, which had always been regarded as a purely geometrical property, could be considered as physical also, caused scientists to revise their notions about the nature of matter. How could something as apparently abstract as a curvature of space interact with something apparently as concrete as a material particle? The question is still puzzling.

Leaving aside the problems involved in the relations between space and charge or between space and magnetism, which prompt the search for a unified field theory, Kapp devotes himself to a discussion of the relations between space and mass: "Relativity theory defines the property of *space* by virtue of which it is able to act on mass; this property is technically called curvature. But relativity theory does not tell us anything about the property of *mass* by virtue of which an unrestrained particle follows the curvature. The property is given the name inertia, but to name a thing is not to explain it or to give any sort of information about it. . . . What is the feature of a particle that causes it to 'engage' with space, as it were, so that its track in space-time follows the curves?"

According to Newtonian mechanics, a massive body causes other bodies in its vicinity to be accelerated, because of the field of force which surrounds the body. To the question, what sort of a thing is this field, Newtonian mechanics has no answer, but relativity theory does: It states that a gravitational field is a region of curved space. But this leads to the further question: why should a massive body cause the space around it to be curved?

The author considers specifically the nature of a neutron. He asks whether we must postulate a substance different in nature from the technical concept, space, namely "particle stuff," or whether we shall say, with Eddington, that the neutron consists of curvature and nothing else. Of these two ideas, the Eddingtonian answer seems to be the lesser evil, since if mass also is curvature, when an unrestrained particle moves in space, its own bound curvature may be said to run on the curvature of space.

Turning to the notion of expanding space, Kapp suggests that this theory is supported by two kinds of evidence, that of inference and that of

observation. The inferential evidence was provided by relativists, who arrived at the expansion theory by reasoning alone. The observational evidence is well-known, being provided by the red shift in the spectrum of light from distant nebulae; this is interpreted as a Doppler effect attributed to a recession of the nebulae from each other.

In spite of this two-fold support, the notion of expanding space has not gained universal acceptance because it is difficult to understand. But if the evidence cannot be shaken, Kapp believes we should at least try to find some valid statements about it. He writes:

"One sometimes says that a fugitive from justice puts space between himself and his pursuers. One does not mean the expression to be taken literally. One only means that the fugitive is running faster than those in pursuit. When he does this he does not create new space but only causes a larger amount of existing space to separate him from the pursuers.

"If the fugitive could literally put space between himself and his pursuers, he would not need to run away from them. He could sit down and smoke a cigarette while he put enough space in front of those who were trying to catch him to make sure that they never got any nearer. If he did this he would not be moving past objects in existing space. He would not be moving at all.

"It is in this literal sense that, in an expanding universe, space originates between us and every distant nebula. . . . But while our galaxy is being caused by the expansion of space to get further from all other galaxies, it is not being caused to get nearer to anything. . . . Let me show why as clearly as possible.

"Two nebulae, *A* and *B*, have been observed and both show the red shift. One of them, *A*, is in the part of the sky called North and *B* is in exactly the opposite direction, the part called South. When we are thinking only of *A*, we may make one of two statements:

- (1) The distance between our galaxy and the nebula is increasing.
- (2) Our galaxy and the nebula are moving relatively to each other.

"We may be inclined to think that these two statements have identical meanings; and so they would in many contexts. But if we attribute the red shift to the expansion of space we have to conclude that they mean different things and that, while (1) is correct, (2) is wrong. . . . To say that our galaxy and the nebula *A* are moving relatively to each other . . . must mean that at least one of the two bodies is moving.

"If this were our own galaxy, it would be moving away from *A*, i.e. southwards. But when we observe nebula *B* we have to conclude that, if our galaxy moves at all, it must be away from *B* and northwards. A corresponding conclusion would be reached if we used a nebula in any other part

of the sky. . . . Wherever our choice fell, it would always cause us to say that we were moving away from the observed nebula. To say that the expansion of space is causing our galaxy to move is to say that the movement is in all directions at once . . . in other words, that our galaxy is not moving at all relative to any other nebula.

"Are we then to take the view that we alone are at rest? . . . This, we know, cannot be. . . . We are thus obliged, whether we like it or not, to accept the odd notion that in expanding space the distance increases between objects that are all at rest relative to their surroundings. . . . Even if one succeeds in appreciating [this] strange fact . . . one may still, I fear, hanker after a force that drives them away from each other. . . . But a little very simple mathematics shows that the notion of forces of repulsion has to be given up, however reluctant one may be to do so. . . . The proper conclusion is thus, that the distance between things can increase while the things are at rest relatively to each other. It is the space between them that originates. The notion of expanding space is more aptly called the Hypothesis of the continuous Origin of Space.

—E. B. Sellon

Self-Regulation: A Unified Attack on the Problem

ALL living organisms, all living systems, require for the maintenance of life some means of stabilizing vital internal processes under environmental conditions which are often hostile to such stability. The parameters (whether the chemical, electronic, emotional, or whatever) are frequently narrow; whereas the range of external, environmental conditions may vary widely. The human body, for example, has an optimum internal temperature at which the various processes of metabolism are best conducted; and it has a means of regulating that internal temperature—an organic, built-in thermostat.

This example of a self-regulating system is but one of a large number by which living organisms adapt to a wide variety of conditions. Within the body of an organism, they are called "homeostatic." In the larger sense, where whole populations of living things in an area are involved, we speak of "ecological" systems.

These systems have similarities to the *inanimate* control systems in physics and engineering. The first special study of these similarities and differences (now termed Cybernetics) is at least in part the outgrowth of a very informal series of monthly discussion-meetings on scientific method. Dr. Arturo Rosenblueth, then of Harvard Medical School, was the sponsor and guiding spirit of these meetings. One of his interested guests was

Dr. Norbert Wiener, Professor of Mathematics at M.I.T. who brought the discipline of mathematics to these symposia over twenty years ago. Several years before the publication of Wiener's book on Cybernetics, the group of scientists working with Drs. Rosenblueth and Wiener had already become aware of the *essential unity* of the set of problems centering about communication, control, and statistical mechanics, whether in the machine or in living tissue. At that time there was a lack of unity in the literature covering these fields. To this group it became increasingly evident that a close parallel existed between certain basic problems in such widely divergent fields as neurophysiology and communication engineering. At this time the most pressing problem in this field was the design of more efficient *servo-mechanisms* for use by the armed forces. The device which detects the presence of an enemy plane, computes its velocity and flight-path, aims and fires the gun at the correct instant, is a servomechanism. The degree of control, of accuracy, it exhibits depends largely upon how well and how quickly it can process information reaching its computer and control circuits, via its "external receptors" which, like human senses, feed it data concerning "outside" conditions.

Man has a compelling desire to know. Not merely those areas outside himself are legitimate areas of investigation, for man himself is the enigma he seeks to solve. Yet the very volume of accumulated data threatens to overwhelm him. Intensive specialization has uncovered an amazing array of facts, but it has also given birth to many new terminologies, all but incomprehensible outside their own fields. Thus increase of factual knowledge comes often at the expense of man's understanding of himself, and his own relatedness to his expanding fields of study.

Recognition of this dilemma is becoming universal, as evidenced by the attempts being made to derive some holistic view of man and his universe. "Information Theory" throws light on problems in communication engineering — but also on obscure problems in the understanding of enzymes and other catalysts; and their study is essential to the understanding of vital phenomena in living matter, such as metabolism and reproduction. "Nerve nets" and other microphenomena of brain function are daily becoming more comprehensible, investigation in this direction being stimulated by a mathematical treatment of the propagation of signals in such a net as shown by R. L. Beurle.

A pattern became clear in 1943, when Rosenblueth, Wiener and their associates saw the essential unity of the set of problems of communication and control, in both the machine and living tissue. The dual-level problem made clear two "prime requisites" for a successful common attack: The

attack had to be an integrated effort on the part of experts in diverse fields and disciplines; and a common terminology had to be developed. Since mathematics enters all fields, the mathematization of concepts and their relations provided the equivalent of a common language, and the substrate for a common terminology. And thus mathematical logic entered the arena on the side of integrated effort.

"Integration teams" in industry are now commonplace: convocations of experts from diverse fields meeting to attack common problems. An informal symposium held in Ottawa on October 20th last year is an illuminating example of such an integrated approach. The subject of the symposium was "Self-Regulation in Living Systems" and the meeting was called by the National Research Council of Canada, *Division of Pure Physics*. The Division's own Dr. D. K. C. Macdonald acted as chairman for the morning session, and has since remarked: "The intention was to offer an opportunity for a group to come together and discuss some quite specific problems which might be of common interest. Almost a dozen disciplines were represented—biology, biophysics, chemistry, electrical engineering, mathematics, neurology, neurosurgery, philosophy, physiology, physics, psychology,—and the response to, and interest in, this first exploratory symposium was encouraging."

Among the papers presented was "Self-Regulation in Living Systems," by Dr. M. Dunbar, McGill University, Montreal. This talk dealt with ecology, i.e. living organisms' habits, modes of life and relation to surroundings, and how they achieve the conditions for survival.

"Cybernetic Levels in the Visual System" by Dr. Alan C. Burton, University of Western Ontario, London, was the final thought-provoking paper. Man's visual system affects many different levels of brain function; some of which admit of "mechanistic" interpretation, while others preclude it. Dr. Burton gave a demonstration, using colored lights, which revealed evidence of a biochemical cycle in the *retinal* receptors. Another demonstration involving a rotating spiral produced odd after-effects. However, by using *one* eye to look at the spiral, and later the *other* eye to look at a projected light spot, the observer still sees the effect. Consequently, this is not an effect in the retina, but in the brain, and is a reaction of the cortex or a subcortical group of cells.

Two photographic slides were shown, whose interpretation was found to depend to a large extent on *conscious will*. While other effects can be thought of in mechanistic terms, changes in cortical interpretation "at will" present great difficulties to such modes of thoughts, and mechanistic reasoning becomes inadequate as explanation.

—Alan Mannion

NEWS AND NOTES

ANNOUNCEMENT

1. The William Hale Harkness Foundation Grant for Research
2. The Institute for Research in the Interrelation between the Sciences and the Humanities

For some years the Foundation for Integrated Education, under the executive directorship of its founder, F. L. Kunz, has served the purposes of surveying and coordinating nationwide efforts at general or integrated education and of developing methods for counteracting the divisive and fragmenting tendencies of current curricula. It has sponsored numerous lecture series and national symposia devoted to the problems of integrative teaching, and the publications which have resulted from such meetings have been, among others, the book *The Nature of Concepts*, their Interrelation and Role in Social Structure, and the journal, *MAIN CURRENTS in Modern Thought*. Lacking adequate funds, the research activities of the Foundation have been carried on in a modest way, chiefly with the aid of the personal resources of the investigators. To date all accomplishments, research and otherwise, depended upon the devotion of the Foundation's officers and the gifts of special friends.

By a recent grant of \$45,000 from the William Hale Harkness Foundation, the organization has been given enlarged opportunities of usefulness. Its research program, which will be coordinated in a new branch provisionally called the Institute for Research in the Relations between the Sciences and the Humanities, will launch investigations in five major fields. One project will deal with the question of the sufficiency of mechanistic models in life processes. Another attempts to unify our understanding of chemical and biological phenomena by concepts of resonance and harmony, as in music. A third will inquire into the possibilities of applying the methods of exact science to problems of values and of human behavior. One is a philosophical inquiry into the relations between science and law and addresses itself to some of the current political problems in very basic terms. The last seeks to illuminate morphological structures in the living world by mathematical and geometrical concepts. Among the chief investigators who have agreed to do this work are Donald Hatch Andrews, Baker Professor of Chemistry, The Johns-Hopkins University; F. L. Kunz, Foundation for Integrated Education; Henry

Margenau, Higgins Professor of Physics and Natural Philosophy, Yale University; F. S. C. Northrop, Sterling Professor of Law and Philosophy, Yale University; and Alfred Taylor of the Clayton Foundation Biochemical Institute, University of Texas.

THE current research and publication program of the Foundation for Integrated Education, generously funded by the William Hale Harkness Foundation, is the beginning of a long-range study. The task is to formulate a method and prepare teaching materials for a philosophy-and-student-centered education. Such a program will have its source in those aspects of knowledge which are rooted in principle, and will draw its substance variously, from Democritus to Dalton, from Plato to Einstein, from Pythagoras to de Broglie, from Patanjali to Jung, and so on.

The program will eventually include a great variety of teaching materials to serve all ages with a consistently enlarging experience. It will draw upon the total cultural potential of man, which is at present so inadequately stirred by education; thus it will help to overcome the compromise and confusion which over-specialization has created, and with them, the disintegration of personality and the loss of human integrity.

By following a method which includes a clearly stated epistemology, it will be possible to show the common conceptual texture of geniuses and talents of all ages and cultures. This is not to be an exercise in encyclopedism, nor a tour along the well-worn paths of speculative western philosophy, conducted by those who seem to miss the fact that the latest contributions of scientific thought are but an enlargement and a documentation of the accumulated insights of East and West. The juncture, so far, is clear as respects matter and energy; research in biology and anthropology will show that life and functional form can be examined by the same methods. If, then, man and his works be added, the result will be the full spectrum needed for reintegration.

This undertaking is concerned with nothing less than the whole of experience. The accumulated and currently enlarging structure of knowledge is the subject, but it is illumined and underlined by respect for the whole human potential—especially that greater part of it yet to be manifested as evolution goes on. Were method not available, an enterprise so vast would be bound to end up as

so many similar endeavors have—in a selection of arbitrated opinions, chosen according to what the inquirers feel is important. Although sincere in their purposes, and productive of a certain amount of restored respect for accumulated culture, such efforts have left the educational system just about where it now is—in Bedlam.

The first studies, therefore, will pursue and make clear the methodology and the implications thereof. They will show to what extent some of the most conspicuous landmarks in knowledge have been re-established, reinforced and deepened by modern inquiries and modern skills. This work has been wanting attention for decades, for man

can only know in terms of classification, concepts and systems; he can communicate knowledge (a vital part of experience) only in such terms. Without such communication, society will wither and die, as later generations become stupified, animalized, or worse. Hence, for man everything turns on education, and in education, knowledge depends upon the correctness, richness and accessibility of the concepts.

Four pages in this issue are devoted to a discussion of these questions, as they appear to the present writer.

—F. L. Kunz

REVIEWS

Towards a Holistic View of Man

IRA Progoff's new book, *Depth Psychology and Modern Man* (277 pp., \$5.00, Julian Press, Inc., New York, 1959), gives a truly inspiring "view of the magnitude of human personality, its dimensions and resources." Careful and painstaking authentication of the bases for this view makes up the major portion of the book. Dr. Progoff draws his information from far broader areas than the title would imply: the theme is basically biological as well as psychological; however, chemistry, astronomy, art, poetry, religion, and human affairs furnish particularly apt examples. For those biologists who would view some of the fundamental concepts of life processes from a challengingly different perspective, this book should prove especially stimulating.

Dr. Progoff describes "depth psychology" as a term that has undergone tremendous changes in meaning. "The *depth* in depth psychology pertains to the unconscious, or so it is most often assumed. But this has been changing significantly in recent years. The awareness of what the unconscious is and what the study of it implies has been growing steadily. Correspondingly, the appreciation of what depth is and what dimensions of experience it involves has been so enlarged that new vistas have opened in fields that were hardly known to the science of psychology before. Since the days when Sigmund Freud offered his pioneer theories about the unconscious, depth psychology has taken strides that have introduced a radically new conception of the unconscious, and especially of *depth*."

We learn that the new developments in depth psychology have made it possible to approach the realm of the unconscious from a constructive point of view. "The new holistic sense of depths is not conceived in terms of the malformations of personality, but rather in terms of what man's nature requires him to become. As with all animal species in evolution, the essential characteristic of the human organism is its spontaneous capacity for growth. Hidden in the depths of man there are indeed personal repressions and inhibitions of the kind Freud talked about; but of much greater consequence are the hidden propensities to growth which set the direction and provide the possibilities for human development.

"As the oak tree lies hidden in the *depths* of the acorn, so the wholeness of human personality with its fullness of spiritual and creative capacities lies hidden in the *depths* of the incomplete human being silently waiting for its opportunity to emerge."

Dr. Progoff explains that in man the primary formations that are the equivalent of innate patterns of behavior among animals are to be found in the great mythologies and ideologies, the great symbolic structures of meaning that provide the frames of reference in terms of which civilizations can live. "These underlying symbolic patterns are expressed in many varieties of imagery. Dreams and fantasy are one form; poetry, painting, and religious experiences are other forms; and the depth vision of reality upon which such scientists as Kepler and Einstein based their studies are still another form. But more important the underlying tendencies and patterns of behavior in man are expressed in processes that . . . move forward out of the depths of the psyche toward the unfoldment and wholeness of the human organism."

The dilemma of a loss of meaning in living and a sense of isolation are sensitively handled. We see that out of man's disillusionment in his faith in reason has come a searching within for meaning.

"When the individual realizes that he cannot achieve a productive life by straining to adapt himself to society, since society itself is confused, he is thrown back upon himself. His main resource then is nothing else than his own being. At first his experience of this is one of great pain, of loneliness, an absence of social support. . . . But that passes when the individual is able to realize that the great treasure house of resources for his life has always been within the individual person."

Dr. Progoff shows how the concept of depth dimension has developed out of the work of Freud, Adler, Jung, and Rank. Then, by means of beautifully chosen examples from case histories, the place of the spiritual side of life in the whole person is demonstrated.

Progoff defines a "modern man" as a person who "has felt in the depths of his being the impact of the basic and characteristic problems of the modern age. And more, it means that he has not run away from these problems, but has permitted them to work within him, to disturb him profoundly and intimately, and that in opening himself to experience their meaning, he has drawn them toward a resolution, at least within his own understanding." Jan Christian Smuts is presented as a fine example of a "modern man."

Those familiar with Edmund Sinnott's views on the role of consciousness in living organisms will understand how they provide the basis of Progoff's case for broader view of the nature of man. "Man is a creature born in the world of nature and functioning in accordance with its laws. Precisely because this is so, Sinnott tells us, the human being reaches beyond himself toward spiritual vistas. The unboundedness of his personality is the highest achievement of evolution."

Progoff develops the concept of "organic psyche" and describes its patterns of imagery. An important relationship between art and science is seen in terms of man's creative imagination and urge toward wholeness. The work of Kekulé is used to illustrate the depth dynamics of discovery.

Man's capacity for self-transformation indicates a possible direction for his evolution. Progoff sees man as a member of the animal kingdom whose distinguishing characteristic is his perception and experience of meaning in the world. "In the perspective of evolution we saw how protoplasm, even in its primal forms, involves a factor that directs it from within. We could identify this, in principle if not in fact, as the psychic component in protoplasm. This psychic component enlarges itself and becomes increasingly important as protoplasm appears in more advanced forms in the course of evolution. By the time it has reached the human level of life, it has developed to the point where it is an intricate, self-consistent, constructive, actively functioning part of the total organism."

"This is the point in the process of evolution at which it becomes possible to discern the organic psyche as a distinct and dynamic reality in the human being. It is the directive principle working toward growth

in the individual and it is also the source of creative meaning in his existence."

Progoff reminds us that while man is a member of the animal kingdom, certain individuals in various cultures and periods of history have been able to achieve a level of personal development that reaches beyond the ordinary capacities of the human species. These individuals have achieved contact and unity with that dimension of being that underlies and sustains man's existence.

"The way to this central experience of one's organic psychic being is simple and direct. It requires essentially that the individual reach the point where he feels himself to be profoundly and spontaneously identified with the flow and growth of his organic psyche. Then the ultimate and intimate nature of his being can unfold and disclose itself in his existence, manifesting itself in many works and relationships in the outer world."

"A variety of methods can be followed in working toward this experience in inner unity. . . .

"Man has searched everywhere, all around himself, in his effort to make contact with the ultimate creative principles of the cosmos. He has cast about in the most distant and least accessible places, although, ironically enough, the knowledge he seeks is reflected within the depths of his own nature. To find it, he need only learn how to look within himself. . . .

"Eventually each person finds himself engaged in an experiment in which he must somehow find the right relationship between the universal principles of the organic psyche and the requirements of his own unique existence."

Progoff explains that the special calling of depth psychology is to reach beyond symbolic and metaphysical doctrines to the core of reality that underlies them. "It sees the evolutionary meaning of man's life expressed in the fact that he is an organism whose nature requires spiritual growth in relation to the unifying processes of life. This spiritual growth involves a continuing relationship to the unifying processes of life, and it is upon this awareness that depth psychology bases its procedures for the development of personality. . . .

"Man's nature is to grow. When he is not able to grow, the dynamic life process that works within him doubles back upon itself and casts its energies into disorder. The result is confusion accompanied by the symptoms of disoriented living that have been diagnosed in modern times as neurosis. The choice before man is thus inherently one of extremes: either growth with its fullness of rewards in life or stalemate with growing restfulness, confusion, and eventual breakdown."

"These extreme alternatives have been inherent in human life all through history, but modern technology and armament have multiplied the dangers and have made it all the more imperative that a road of growth be made accessible to modern man. It is at this point that depth psychology in its holistic form becomes more than a large frame of reference for scientific research. It becomes, much more, an urgently needed tool of survival for modern man because it provides an affirmative scientifically grounded conception of man's life that can be used constructively in the creative development of human personality."

Biologists are slowly groping their way out of the reductionist pit of the last one hundred years. We now recognize that a "whole" organism is much more than the sum of its parts. However, as Progoff explains, "The modern mind is so anxious to show that it is dealing with things that are clearly perceivable rather than with what is obscure that it inadvertently limits itself to the surface of things, and traps itself in superficiality. And yet, paradoxically, in the study of man it is just what is obscure, intangible, and difficult to lay hands on that is most important to understand. It is necessary that we reach the nonpersonal—and eventually the transpersonal—sources of personality if we are to comprehend the growth of the specific individual, the child visibly moving toward maturity."

—Ruth Lofgren

The Enduring Miracle of Living Forms

THE importance to the philosopher of nature of the two books noted below turns upon the following well-known puzzle: Consider a species of creature that has existed (say) 300 million years. Accept the proposition that the germ cells are a continuous chain. Let us suppose our animal is lowly and the individual lived perhaps a year, and reproduced only annually. Then of this species, say the trilobites, we are required to believe that it reproduced itself three hundred million times with marvelous exactness. Some had frills and furbelows, but all were trilobites. Where are we to look for the cause of this constancy?

Transfer the argument from time to space. In a sizable inorganic crystal many more than millions of atoms are added up by accretion so precise that the characteristic form persists throughout. It is known that this preciseness in morphology is governed ultimately not by mechanics but by the properties of crystalline space. Why then (if we accept the law of economy of thought) do we not inquire into the properties of space-time as the final governing principles of the morphology of creatures which show such consistent form in space, through time?

The Living Cell by J. A. V. Butler (Basic Books, New York, 1959, 166 pages, bibliography, index, illustrated, \$3.50) and *The Evolution of Genetic Systems*, C. Darlington (Basic Books, New York, 1959, 240 pages, bibliography, index, illustrated, \$5.50) constitute a valuable combination for the student of the fundamentals of the life process, as they are established today.

The first is for the layman, and it gives him the language and data he needs about the cell, its mitosis, and its functions. The text is lucid, charged with information, and takes the reader's serious interest for granted. The diagrams and the microphotographs are superb. The account moves all the way up to cells in the cortex of the mammalian brain. The second volume is a revised and enlarged reissue of the 1939 same title. One may say that it provides everything in the way of data that is needed to appreciate fairly well the workings of that mathematical miracle called mitosis, which, in the relatively rigidly determinate nu-

cleons (trading with the cytoplasm and so in turn with the environment), can and does carry forward the adult form and function unchanged those hundreds of millions of years which the geological history of life requires us to accept. Today this stark enigma is being investigated at the chemistry level, and bits of the puzzle are being collected. The treatment is mechanistic, and sickness (cancer, for example) is looked upon as a breakdown or an atavism in mitosis, with random numbers of chromosomes and rates of mitosis, etc., instead of the specific number and timing of the healthy cell, i.e. morbid mitosis. Yet even here "One turnover may even give rise to diverse *fixed* strains with diverse *fixed* chromosome numbers." (*The Evolution of Genetic Systems*, p. 205, italics ours.) Whether this originates wholly or in part in the cytoplasm does not alter the factual aspect of the disorder of the chromosomes.

In other words, the power of the mathematically systematizing units continues even in morbid creatures.

Here, then, are two volumes which taken together enable us to acquire the data as to the structuring and the biology of the genetic roots of being. Not much that is significant is said about those contributions toward thinking which *physics* has made and which so few care to apply. In this domain we need much more treatment of the same material in terms of fields and the psyche. It would be a very real help to have the thinking of Edmund W. Sinnott applied, and research set up into all aspects of the mathematics of genetics in terms of basic properties of space and of space-time. A vast undertaking, this would be, but it is bound to come.

—F. L. Kunz

The Universal Nature of Human Creativity

Creativity and Its Cultivation, edited by Harold H. Anderson (Harper, N. Y., 1959, 267 pp., \$5.00) is an exceedingly valuable and timely book. Consisting of "addresses presented at the interdisciplinary symposia on creativity" at Michigan State University, it is a collection of varied approaches to the quality of creativity in human personality. Because of its range of viewpoint, this volume is especially valuable in providing in perspective the weaknesses and strengths of some of the many approaches to the subject.

To this reviewer, however, one point of underlying agreement seemed to be specially significant. Implicit in the remarks of all the authors is the view that creativity is not a trait peculiar to a special "type" of personality, as artists, poets, and so on, but rather that creativity is a quality of the human personality in general, and that it is expressed to the degree that the individual is fulfilling his possibilities. Although it is not explicitly stated in the book, this view leads to a very fundamental conception, namely, that an adequate theory of human nature can be found not by studying man in terms of his psychologic pathology, but in terms of his organic nature and potentialities. In this regard, the essays of the present volume provide several valuable criteria for what an adequate depth psychology should do.

Several eminent authors are represented here, among them, Carl Rogers, Edmund Sinnott, Abraham H. Maslow, Henry A. Murray, Margaret Mead, Erich Fromm, Harold Lasswell, and Ernest Hilgard. Unfortunately almost all the contributions are briefer than we would wish them to be; but that is a limitation inherent in symposia.

In itself, the publication of this volume is testimony to the fact that the question of creativity is forcing itself to the fore in the psychologic study of man. "Forcing" is the correct word, for, with its mechanistic temper, academic psychology in the past has shied away from any dynamic consideration of creativity. Now, however, it is being led to face the problem anew. In his essay, Prof. Murray calls attention to the "multiplicity of scientific investigations of this phenomenon recently completed or now in progress," and to the "high positive cathexis" or interest value that the word "creativity" now possessed. Creativity has become an exciting subject for psychologists; the trouble is that it finds them unprepared. Thus, in his contribution, Prof. J. P. Guilford reports that when a professor of journalism came to him to inquire "what psychologists knew about creative thinking . . . with considerable regret and chagrin it was necessary to tell him that there was almost nothing that psychologists knew about the subject." (p. 143) And in the same vein of candor, Prof. Hilgard begins his essay with a warning that "the field is in a rather unsatisfactory state, and psychologists have thus far raised more questions than they have answered." (p. 163).

That is the situation in which academic psychology finds itself. The question now is whether there are any other conceptual tools that can be more helpful.

Rollo May presents the existential approach to creativity based upon the work of Ludwig Binswanger. He emphasizes three points; the importance of personal involvement; the intensity of this involvement; and the unity of subject and object in the work. These points are exceedingly interesting and well stated. Intensity of involvement is a highly important factor in creativity. The Binswanger statement of it, however, as May presents it, gives the impression of being mainly a philosophic formulation. Within these limits it is valid; but it does not provide us with access to the psychologic dynamic factors that are at the source of creativity. Here some additional tools seem to be required.

May's further point about the unity of subject and object is of very great importance, but it involves a similar difficulty. This is a concept that has been quite obscure to many people, mainly, it would seem, because it is conceived in terms of the abstract philosophizing that Binswanger derived from Edmund Husserl. But the unity of subject and object is not a question of intellect; it is valid only as a fact of experience. To be meaningful, then, it requires more than a philosophic statement; it requires dynamic psychological concepts and procedures that will make the experience possible. The lack of this seems to be the most basic limitation of existential psychology at the present stage of its development, just as its great merit is that it sets the situation and demonstrates the nature of the need.

In the essays presented by Carl Rogers and Abraham Maslow as attempt is made to fill in something of this lack. With a considerable community of spirit

between them, Rogers and Maslow seem to share also the existential sense of life expressed by Rollo May. With them, also, involvement is important, but they speak of it as "openness to experience;" and this is indicative. It may not be quite correct to speak of their work as an American version of the existential outlook, but it is true nonetheless that there is an existential quality to their approach, and that it is more direct and more empirical than the European version.

A good instance of this direct, empirical approach is Maslow's study of what he calls "peak-experiences." "What I did," Maslow reports, "was to question many persons (not only healthy ones) about the most wonderful, most ecstatic experiences of their lives." (p. 89) From the answers he received, Maslow has generalized certain conclusions, mainly that these experiences tend to give the individual a new point of view for living, that they tend to resolve his conflicts, and that they bring him into closer contact with the seed of his Self, so that what Maslow calls "self-actualization" becomes possible. Here we have what seems certainly to be a careful and valid way of approach. What seems to be required for Maslow's work, however, is more face-to-face contact with the persons he is studying so that he can reach the inner dynamics, the dreams, and inner psychologic processes that can provide concepts and techniques by which one can arrive at these "peak experiences" in practice.

Rogers takes a significant step in this direction with his essay which he entitles, "Toward a Theory of Creativity." "The mainspring of creativity," Rogers writes, "appears to be the same tendency which we discover so deeply as the curative force in psychotherapy — man's tendency to actualize himself, to become his potentialities." This tendency is covered over and hindered in its expression, he says, by "layer after layer of encrusted psychological defenses." The goal of Rogers' method of therapy, then, is to eliminate these defences so that man's natural tendency toward "self-actualization" can come through.

On this conception of "self-actualization" the work of Rogers and Maslow finds a meeting ground, one that should be exceedingly fertile in the future. It will however require very careful and critical consideration if it is to be developed adequately.

For example, Maslow found that his empirical researches contradict the basic Freudian conceptions (p. 91); but have the full implications of this yet been explored either by Maslow or Rogers? Its meaning, it would seem, is that psychology of "self-actualization" requires a detailed understanding of what is working affirmatively and dynamically in the depths of the psyche. The negative work of releasing the repressions is not nearly basic enough, and it may very well turn out to be only a minor part of the total psychologic work that needs to be done in opening the way for creativity. If this is so, an additional vista must be opened in psychology, one that will be capable of studying the depths of the Organic Psyche from a Holistic point of view.

This volume, with its breadth and scope is of major value in helping us appreciate the basic problems facing the study of man today. Of the several valuable contributions presented in it, it seems to this reviewer that those of May, Rogers, and Maslow in particular are significant steps in the right direction.

—Ira Progoff